DEC STD 204-0 Software Correction and Distribution

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ABSTRACT: This standard describes when and how software engineering change orders (ECO) and mandatory updates (MUP) should be issued and it identifies internal distribution methods for the resultant patches.

APPLICABILITY: This standard applies to worldwide product managers, project leaders, release engineers, documentation project leaders, engineering managers, quality assurance and testing organizations, Customer Support Center (CSC) personnel, Digital Service personnel, and software manufacturing for Software Supply Business (SSB), European Software Supply Business (ESSB), Software Duplication and Distribution (SD & D) for software products that are engineered by Digital and distributed from software manufacturing.

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Responsible Department:	Software Quality Assurance
Responsible Person:	Ed King
SMC Writer:	Ellie DeVries

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Ed King - Software Quality Assurance

Eric Williams - Standards Process Manager

Direct requests for further information to:

Ed King
Use $ VTX ELF for the latest location information.

Use VTX SMC to order copies of this document from Standards and Methods Control. Send distribution questions to JOKUR::SMC or call DTN: 234-4423.

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1 INTRODUCTION

This standard provides solutions to problems currently encountered in the release of software kits containing software fixes.

For the purpose of this standard, what has historically been called a modification to software to fix a problem (binary or source change) or a software patch is called a software fix. A software fix that adheres to the requirements of this document is called a Software Engineering Change Order (ECO). *For simplicity, a Software Engineering Change Order is referred to as an ECO throughout this document.*

A critical ECO that needs to be distributed through software manufacturing to all customers is called a mandatory update (MUP).

A lack of standard processes can cause customer dissatisfaction as the volume and complexity of Digital's products grow. This standard was developed to address these issues so that software fixes are delivered to customers in a consistent manner and before customers have to ask for them.

1.1 SCOPE

This standard applies to worldwide product managers, project leaders, release engineers, documentation project leaders, engineering managers, quality assurance and testing organizations, software manufacturing, Customer Support Center (CSC) personnel, and Digital Service personnel for all software products that engineered by Digital and are distributed from the software manufacturing.

1.2 PURPOSE

The purpose of this standard is to document Digital's requirements regarding the release of software kits containing software fixes.

1.3 BACKGROUND

Resources to provide software fixes to customers on an informal and limited basis are available. Typically, the local CSC supplies a software fix to the customer who first reports the problem. The fix is then made available to any other customers reporting a problem with similar symptoms. However, to ensure the quality of software fixes, a more formal process must be established to cover the following areas:

- Naming conventions
- Content requirements
- Kit requirements
- Addition of a regression test for each software fix
- Criteria for testing of a software fix
- Criteria for release of a software fix
- Distribution
- Timetable for getting software fixes to Digital Services

An ECO is a software fix that follows this formal process. To make an ECO available to other service customers, engineering must submit the ECO to the Central Software Engineering Release Library (CSERL) maintained by Systems Quality Operations and Information Services (SQOIS). If there are no conformance issues or problems with the ECO, SQOIS loads the ECO into the Technical Information Management Architecture (TIMA) data base. The CSC in each geography has access to TIMA and makes the ECOs available to service customers. The service customers can call the CSCs in their geography to obtain the ECOs.

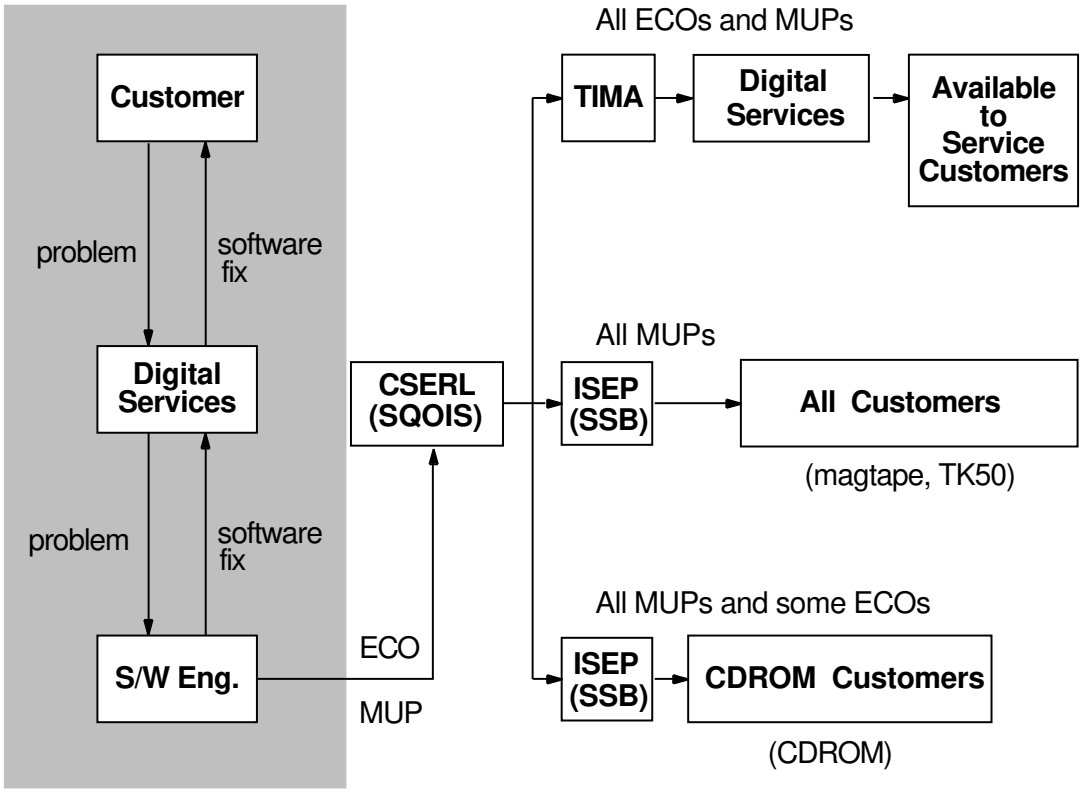
In addition to making ECOs available through the CSCs in each geography, there may be a need to include an ECO on the CDROM that contains the product. For products whose only distribution medium is CDROM, ECOs may be included with the CDROM on a more frequent basis. Since the CDROM is updated on a more frequent basis, this allows for more availability of the ECO.

Not all service customers have chosen to access ECOs at the CSCs, nor have all customers signed for CDROM distribution. Therefore, not all customers have their software updated with all current ECOs. For critical ECOs such as a data corruption fix, a more formal means of distribution is required. The most widespread distribution can be accomplished through software manufacturing on traditional media such as TK50 and 9-track magnetic tape. A critical ECO that is distributed through software manufacturing to all customers is called a MUP. MUPs are electronically delivered to the software manufacturing library from the CSERL. The software manufacturing library is called Information System for Electronic Publishing (ISEP). The traditional media are built from the ISEP library.

MUPs, like ECOs, are also loaded into TIMA. Since the MUPs ship to all customers through software manufacturing, only in special cases are MUPs made available to service customers through CSCs. Additionally, MUPs are distributed on CDROM.

Figure 1 illustrates these methods of distributing ECOs and MUPs to customers. Note that this standard does not address the process for software fixes represented in the shaded area. In response to a customer reported problem, engineering can continue to provide software fixes directly to a customer on an individual basis. Appendix A contains a diagram that shows the connection between the distribution mechanisms shown in Figure 1 and the entire software correction process.

Figure 1: ECO and MUP Process



The requirements outlined in this document are part of the solution to problems which are due to lack of standards and inconsistency in communicating with customers and transferring corrections and fixes to problems. When an ECO or MUP is required, it means that something went wrong with the process that originally was used to create the software. In addition to providing the fix, engineering should determine how the error was introduced or caused and how this type of error can be prevented in the future. Software delivered to Digital Services must be problem-free if customer perception of Digital's product quality and engineering competency is to be restored.

1.4 RESPONSIBILITIES

Software Engineering—Software engineering is defined as the group that creates the software product and the associated ECOs and MUPs. Engineering is also responsible for the testing and verification of those ECOs and MUPs in accordance with this standard. Engineering may do the testing from sources within their organization or may choose to contract to any other party, if agreed to by the parties involved. Engineering is responsible for supplying the ECO or MUP along with the necessary documentation to SQOIS.

SQOIS—The Software Quality Operations and Information Services group will administer the process by which ECOs and MUPs are stored into and distributed from the CSERL.

SQA—The Software Quality Assurance function is responsible for ensuring software engineering groups follow the criteria outlined in this standard. SQA does not test the ECOs and MUPs.

Digital Services—Digital Services is responsible for receiving customer input, providing the information to engineering, and making the ECOs available to service customers. In special cases MUPs are made available to service customers through CSCs.

Software manufacturing—Software manufacturing is responsible for supplying MUPs and related documentation to all customers. The software manufacturing library is called Information System for Electronic Publishing (ISEP).

2 USAGE REQUIREMENTS

This heading discusses when ECOs and MUPs are to be issued. ECOs and MUPs allow engineering to get a small number of fixes to customers as quickly as possible. They are not replacements for regularly scheduled releases.

There is a text file available to assist engineering groups in producing an ECO or MUP for the first time. This file can be obtained from:

SQM::SYS$INFO:STD_204_GETTING_STARTED.TXT.

MUPs and ECOs are ultimately funded by engineering through a process known as warranty revenue transfer. MUPs and ECOs are considered to be costs of servicing products under engineering warranty. Enhanced ECO and MUP activity reporting may be necessary to assure that product managers understand the financial impact to their organization and to Digital when deciding to ship ECOs or MUPs.

2.1 USAGE REQUIREMENTS SPECIFIC TO ECOS

An ECO should be issued to correct a problem that will have a negative impact on support calls and cost, for example, a performance degradation problem that is experienced by only a subset of customers.

2.2 USAGE REQUIREMENTS SPECIFIC TO MUPS

A MUP should be issued whenever a critical software fix needs to be made available to all customers. Some examples of critical problems that would warrant a MUP are data corruption, security issues, and the software not being available on the system. When a problem of this nature is discovered, the product program team will decide whether to put the product on engineering hold. During the time that the product is on engineering hold, the software cannot be shipped to any new customers. When the MUP is made available, the product is taken off engineering hold.

Except under unusual circumstances, there should not be frequent releases of MUPs. The installation of MUPs may require that systems or applications be shut down, which causes unavailability of the software and hardship to system managers and users. Also, MUPs incur an additional cost to Digital since they are unplanned releases.

3 REQUIREMENTS FOR SUBMITTING ECOS AND MUPS

Any customer service organization that produces an individual software fix for use in an ECO or MUP must supply the individual fix to Engineering. Engineering is responsible for submitting the ECO or MUP into the CSERL which, when ready, is released to TIMA. The MUP is also released to ISEP.

To ensure that only high quality ECOs and MUPs are issued, engineering is responsible for ensuring that the following requirements for each ECO and MUP are met:

1. No new functionality or new hardware support
2. Licensing requirements
3. Documentation
4. Content

5. Installation
6. Naming conventions
7. Testing
8. Verifying
9. Announcement to Digital Services
10. Subsequent releases of the product

The information in the following subheads describes these requirements as they apply to both ECOs and MUPs. Where appropriate, details specific to ECOs or MUPs are provided.

3.1 NO NEW FUNCTIONALITY OR NEW HARDWARE SUPPORT ALLOWED IN ECOS AND MUPS

ECOs and MUPs must not contain any new functionality. In addition they must not be for support of any hardware or operating system version that is not listed in the software product description (SPD) or system support addendum (SSA).

Digital's licensing warranty states that a product will conform to its SPD. The SPD for a product corresponds to the version of that product shipping when the license was purchased. ECOs and MUPs are issued as fixes to the product for conformance to the existing SPD and SSA. In other words, if a product does not conform to the existing SPD or SSA, the ECO or MUP can contain the necessary code to bring conformance to the SPD or SSA.

3.2 LICENSING OF ECOS AND MUPS

A new license is not required for ECOs and MUPs.

There is no need to reregister with the License Management Facility (LMF) since the ECO and MUP uses the same Product Authorization Key (PAK) as the previous release. In addition, since MUPs do not contain added functionality, they do not require update licenses.

3.3 DOCUMENTATION OF ECOS AND MUPS

Since ECOs and MUPs must not contain any new functionality, they should not have any impact on the documentation set for the product (including the SPD and SSA) except for the release notes. The installation guide can be updated if the current one is incorrect and a corrected version will enable the customer to install the product. If a corrected guide is produced, the guide must be included in the ECO or MUP kit (saveset,subset, and so forth). Otherwise, the changes to the guide must be included in the release notes.

The documentation of the ECOs and MUPs must consist of the following:

1. Cover letter
2. On-line release notes
3. Submission Form

For more information regarding the content of the documents, please refer to subhead 3.4.

3.4 CONTENT OF ECOS AND MUPS

All ECOs must be cumulative up to an image (or component), meaning they must contain all prior ECOs for the components being replaced or fixed. All MUPs must be cumulative, meaning they must contain all prior MUPs and all prior ECOs for the components being replaced or fixed in the MUP.

ECOs and MUPs must contain the following:

1. Standard installation architecture for the platform containing the fixes and on-line release notes. For example, VMS products should use VMSINSTAL saveset, Digital UNIX Operating Systems should use *setld* subset, and MS–DOS products should use ZIP files.
2. Cover letter containing installation instructions as well as a description of the problems corrected. See sample in Appendix C.

   Note that the kit can also contain an updated installation guide and, on occasion, other critical documentation.
3. Completed submission form. This submission form is available only to Digital Services. Since only Digital Services has access to this form, engineering can include additional information specific for Digital Services. The submission form is loaded into TIMA with the saveset or subset and the cover letter. See sample in Appendix D.

The MUP can be a complete software kit (with the savesets derived from either edited sources or already patched) including all documentation or a partial kit (an ECO or ECOs or replacement module). A partial MUP may be useful for large products, such as VMS, and products that have complex installations, such as ALL–IN–1. Complete MUPs are more applicable for smaller products with one image, such as VAX Pascal.

Release notes are required for ECOs and MUPs. At a minimum, the release notes for ECOs should contain the cover letter. For partial MUPs, the release notes should be separate from the existing release notes and describe only what is fixed in the MUP. For complete MUPs, the existing release notes should be updated to describe what is fixed in the MUP. A release notes template can be obtained from:

SQM::SYS$INFO:STD_204_RELEASE_NOTES_TEMPLATE.TXT.

The cover letter will become the TIMA article. Digital Services and customers in some geographies will view this cover letter before deciding to copy the ECO or MUP to their system. This is why it is important the cover letter contains the description of the problems fixed. A cover letter template can be obtained from:

SQM::SYS$INFO:STD_204_COVER_LETTER_TEMPLATE.TXT.

The cover letter must contain installation instructions or a pointer to the installation guide. The cover letter must also contain a legal notice at the end of the letter. Refer to the last 2 paragraphs of the Sample Cover Letter in Appendix C for an example of a legal notice. The cover letter example in Appendix C can be obtained from:

SQM::SYS$INFO:STD_204_COVER_LETTER_EXAMPLE.TXT.

3.5 INSTALLATION OF ECOS AND MUPS

The following are important concepts regarding installation of ECOs and MUPs:

- The standard installation procedure **for the platform** must be used to install the ECO or MUP. For example, VMS products should use VMSINSTAL, Digital UNIX Operating Systems should use *setld*, and MS–DOS products should use ZIP files.
- Since the ECOs and MUPs are cumulative up to a component, the installation procedure must check whether previous MUPs (and ECOs) have been installed. They must install them if they have not been installed.
- The installation procedure must identify the name of the product and (especially for a MUP) the revision level to which the product is being upgraded.
- All savesets or subsets on the MUP kit must be installed. A customer must not be able to choose ECOs within a particular component.

Installation control file templates can be obtained from:

- VMS—SQM::SYS$INFO:STD_204_VMSINSTAL_PATCH_IMAGE_TEMPLATE.TXT
- VMS—SQM::SYS$INFO:STD_204_VMSINSTAL_REPLACE_IMAGE_TEMPLAT.TXT
- UNIX—SQM::SYS$INFO:STD_204_UNIX_SETLD_TEMPLATE.TXT
- DOS—SQM::SYS$INFO:STD_204_DOS_INSTALL_TEMPLATE.TXT

3.6 NAMING CONVENTIONS FOR ECOS AND MUPS

ECOs and MUPs must follow standard naming conventions for the following:

- SPD version numbers
- Saveset and subset names
- Release note names
- Contents of image-specific versions

For both VMS and Digital UNIX Operating Systems, revision levels are indicated by changing the revision level of the software, using numbers or letters without modifying the point release. If the user-visible interface displays the product version, it is advisable to update it if possible.

The following subheads describe these naming conventions as they apply to both ECOs and MUPs. See Table 1 for a breakdown of these revision levels by release type.

Table 1: Naming Examples

Type of Release	Product Version	Saveset (VMS)[1]	Subset (UNIX)	Image Header[2]
Major	V4.0	SNA040.A	SNA400	V4.0-3
Minor/Maintenance	V4.1	SNA041.A	SNA410	V4.1-2
MUP	V4.1A	SNA[fn]MUPA041.A	SNA411	V4.1-55A
ECO	Unchanged	SNA[fn]ECO01041.A	SNA411	V4.1-175

[1]The facility name, indicated by the letters "fn", is enclosed in square brackets to indicate that it is an optional field.

[2]Since an individual software fix is usually sent to a customer who reports a problem, it is strongly recommended that the image header identification use the letter X instead of V to denote a unsupported or experimental version.

3.6.1 Product Naming Conventions for ECOs and MUPs

An ECO revision does not change the product version number.

A MUP can be a partial software media kit (an ECO or replacement module) or a complete software media kit. Both partial and complete MUPs are assigned a separate product version number. The revision number is attained by attaching an alphabetic character to the last field of the current version number. Hence, the original MUP is VMS/SNA V4.1A, the subsequent MUP is VMS/SNA V4.1B, and so forth.

3.6.2 Saveset and Subset Naming Conventions for ECOs and MUPs

The saveset and subset naming conventions are defined in *EL-CP790-00, Digital Technical Requirements Reference Guide*.

To help identify an ECO or MUP, the saveset name should contain the word ECO or MUP in the name. This convention may not always be possible, however, since the maximum size for a VMSINSTAL (actually due to a BACKUP restriction) saveset name is 17 characters, which includes the "." and letter extension.

If an ECO spans multiple versions of the product, then the version number within the saveset name should use the first applicable version. The release notes, cover letter, and submission form should list all versions of the product the ECO applies to.

Since the Digital UNIX Operating System installation procedure does not allow words such as MUP or ECO in the subset name, the subset name for Digital UNIX Operating System products must increment the numerical field. For example, the subset name for the next MUP or ECO after SNA V4.1 is SNA411. The next one is SNA412, and so on.

MS–DOS file names should follow the MS–DOS operating system naming conventions.

3.6.3 Documentation Naming Conventions for ECOs and MUPs

Since the cover letter and submission form are separate files, they should follow the same format of the saveset and subset naming conventions using a different file extension to identify the file type. The file extension for the cover letter should be COVER_LETTER and the file extension of the submission form should be SUB_FORM. For example, where SNAECO01041.A is the saveset file name, the following would be the file names for the cover letter and submission form, respectively, of the ECO listed in Table 1.

SNAECO01041.COVER_LETTER
SNAECO01041.SUB_FORM

3.6.4 Image Header Identification Naming Conventions for ECOs and MUPs

Each image's identification must be updated so that the system manager can identify if an image has been modified. Any new image must be identifiable and unique from other versions of the same image. The content and display of the image identification area for VMS images and Digital's UNIX Operating System executables are defined in the Digital Technical Requirements Reference Guide.

See Table 1 for examples of image identification by release type.

3.7 TESTING ECOS AND MUPS

The testing requirements for ECOs and MUPs are as follows:

- If possible, the new ECOs and MUPs in the kit should be tested at the sites where the problems were originally reported to ensure solution to the customer's satisfaction. MUPs should also be provided to users of the software within Digital for additional testing.
- A regression test for each ECO or MUP problem fixed must be added (if technically possible) to the regression test suite, so that the problem does not occur again.
- The full set of regression tests must be run against any products with ECOs and MUPs installed to ensure that previous ECOs function properly.
- The development group of the Base International Version (BIV) of the product containing language variants (for example, Rdb/Japanese), must supply a copy of the ECO or MUP to the development groups of the language variants to ensure there are no adverse effects on any of the language variants. Any adverse effects must be rectified before the ECO or MUP is distributed to customers.
- Testing for the interoperation of the ECO or MUP must be performed. For example, Rdb/VMS, with its ECO or MUP installed, must be tested against a subset of its dependent products.

Engineering owns the quality of the product, which includes creating and executing the regression test suite. However, the testing itself can be contracted to any other party, if agreed to by the parties involved.

3.8 VERIFYING ECOs AND MUPs

Engineering is responsible for validating the ECO and MUP against this standard. However, the validation can be contracted to any other party, if agreed to by the parties involved.

3.9 ANNOUNCEMENT TO DIGITAL SERVICES

Engineering must notify their contacts in Digital Services of planned ECOs and MUPs. Similarly, Digital Services should keep engineering aware of software problems reported by customers.

3.10 SUBSEQUENT RELEASES OF THE PRODUCT

Engineering must implement the necessary source code changes for all ECOs and MUPs in the next maintenance or functional release of the product. The release notes of the next release of the product should list the problems (including the ECOs) that are fixed in that release. If an ECO is not included in the release, engineering is responsible for reissuing the ECO for the new version of the product prior to the release of that product to customers.

4 DISTRIBUTION OF ECOs AND MUPs

Once the ECO or MUP has been tested, qualified, and is ready for distribution, engineering will submit the ECO or MUP into the CSERL maintained by SQOIS.

For ECOs: SQOIS will release the ECO from the CSERL to TIMA. Any compliance issues or problems will need to be resolved or an exception granted from SQA before the ECO can be released from the CSERL to TIMA.

For MUPs: Since MUPs are distributed by software manufacturing to all customers, the new product form (NPF) needs to follow the standard approval process before the MUP can be released from the CSERL to ISEP and TIMA.

4.1 TIMA

Once an ECO or MUP has been added to the CSERL and is ready to be released, it will be loaded into the TIMA data base. This means that the actual ECO (saveset or subset or so forth) or MUP, as well as a cover letter and a submission form, are added to the TIMA data base. Refer to Appendix C for a sample cover letter and to Appendix D for a sample submission form.

The CSCs in each geography have access to TIMA and will make the ECO (saveset or subset or so forth) and a cover letter available to service customers. In special cases, MUPs are made available to service customers.

The TIMA data base should contain only ECOs and MUPs submitted from CSERL. Digital Services can add work-arounds, but should not add its own ECOs or MUPs to the TIMA data base.

For more information on TIMA, please send mail to CSSE::TIMA_MGR.

4.2 SOFTWARE MANUFACTURING (TRADITIONAL MEDIA)

Once a MUP has met the release requirements as described in text under subhead 4, it is released to software manufacturing and placed on traditional media types (magnetic tape, TK50) for distribution to service customers worldwide.

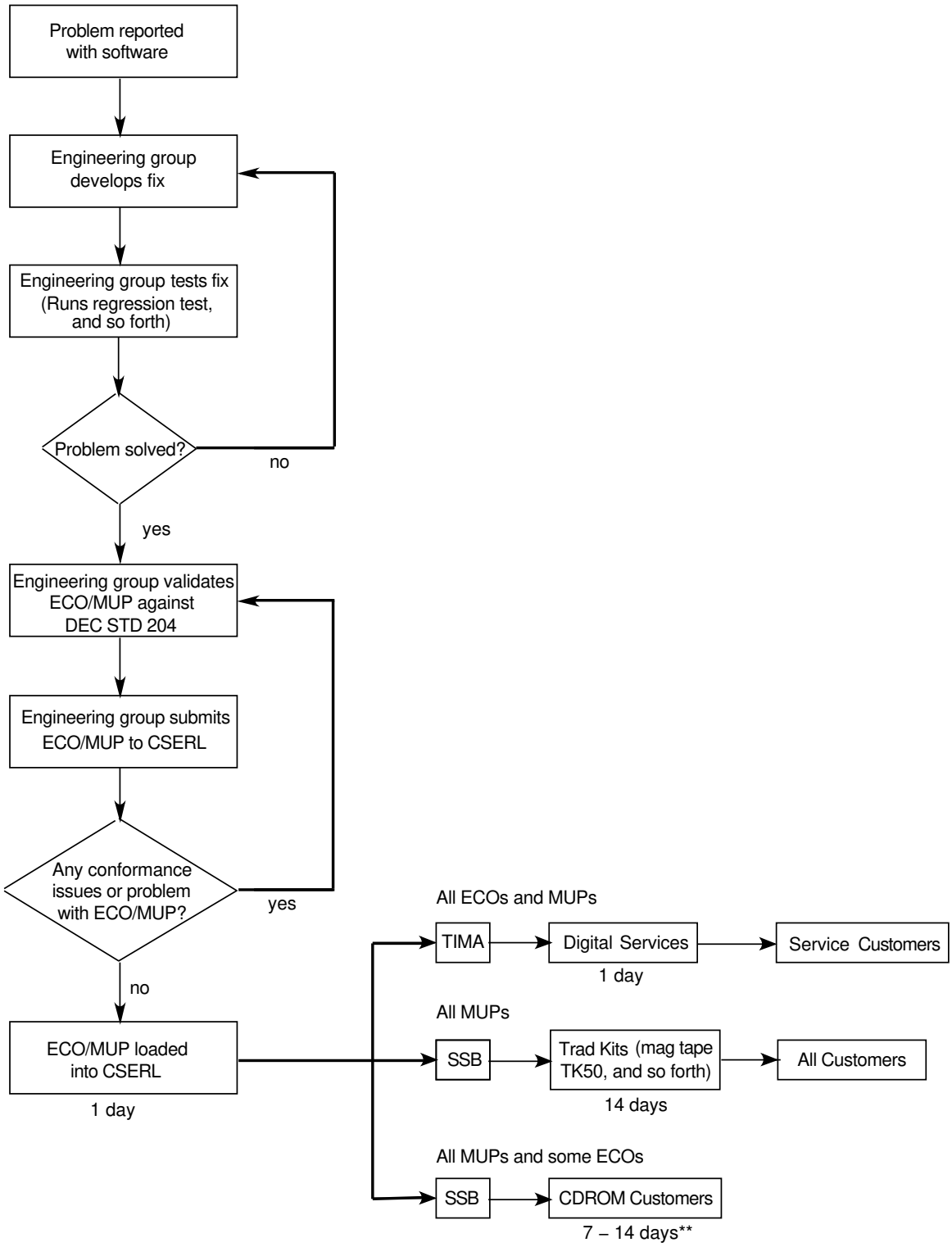
4.3 SOFTWARE MANUFACTURING OF CDROM CONSOLIDATIONS

A CDROM of consolidated products is shipped on a regular basis to service customers who have signed for CDROM distribution. All MUPs, and on occasion ECOs, are included on the consolidations.

APPENDIX A SOFTWARE CORRECTION FLOW

The diagram in this appendix illustrates the software correction process (including time frames) from the time a customer reports a problem to the time an ECO or MUP is released.

Figure 2: Software Correction Process



** Note that the 7–14 days listed above is the build cycle time for a CDROM (that is, the time from which the library containing the software is frozen until the CDROM is shipped to the customer). This build cycle time is based on the quantity of discs in the offering and the product demand.

APPENDIX B RELEASE POLICY MATRIX

This appendix summarizes the requirements that engineering must meet in order for the ECO or MUP to comply with this standard.

Table 2: Release Policy Matrix

Requirement	Individual Software Fix[1]	ECO	MUP	Refer to Subhead
New functionality/hardware allowed	No	No	No	3.1
Update license required?	NA	No	No	3.2
New LMF PAK	No	No	No	3.2
Cover letter	Disclaimer[3]	Required	Required	3.4
Submission form	NA	Required	Required	3.4
Release notes	Optional	Required[3]	Required	3.4
Cumulative (contains all previous ECOs or MUPs)	Strongly recommended	Required	Required	3.4
Standard platform installation procedure[2]	Optional	Required	Required	3.5
Product naming conventions	No change	No change	Update required	3.6.1
Saveset/subset naming[4]	TRG	TRG	TRG	3.6.2
Image header ID naming[4]	TRG	TRG	TRG	3.6.4

[1]The policy for Individual Customer Fixes is outside the scope of this document. This information is supplied for comparison purposes only.

[2]For example, VMSINSTAL or *setld*.

[3]Minimum portion of the cover letter.

[4]Refer to EL-CP790-00 Digital Technical Requirements Reference Guide (TRG)

Table 2 (Cont.): Release Policy Matrix

Requirement	Individual Software Fix[1]	ECO	MUP	Refer to Subhead
Test ECO/MUP at site where problem reported[5]	NA	Required	Required	3.7
Add a regression test to the regression test suite	Strongly recommended if technically possible	Required if technically possible	Required if technically possible	3.7
Give kit to internal sites	Strongly recommended	Strongly recommended	Required	3.7
Give copy to group responsible for translating product	Optional	Required	Required	3.7
Run regression tests	Strongly recommended	Required	Required	3.7
Perform Interoperability Testing	Optional	Subset	Required	3.7
Notification process	Normal support channels	Recommended	Recommended	3.9
Include fix into next release of the product.	Optional	Required	Required	3.10
Submission mechanism from engineering	Support channels	Electronic	Electronic	4
Distribution method	Direct to customer using support channel	TIMA to Geographies and/or ConDist	TIMA to Geographies and SSBs (TK50 /magtape) and/or ConDist	4

[1]The policy for Individual Customer Fixes is outside the scope of this document. This information is supplied for comparison purposes only.

[5]When customer agrees to help.

APPENDIX C SAMPLE ECO COVER LETTER (TIMA ARTICLE)

This appendix contains a sample ECO cover letter (also known as a TIMA article) that contains installation instructions and information about shipping channels. The cover letter example listed can be obtained from: SQM::SYS$INFO:STD_204_COVER_LETTER_EXAMPLE.TXT.

An ECO template file can be obtained from: SQM::SYS$INFO:STD_204_COVER_LETTER_TEMPLATE.TXT.

```
DIGITAL

Cover Letter for ECO Kit # 001 for VAX Rdb/VMS Version V4.0A

Problem Description
-------------------

The VAX Rdb/VMS ECO release notes contains a complete explanation of each
ECO that will be applied.  Below is a brief description of each ECO:

     ECO #        Description/Symptoms
     =====        ====================
     ECO 31   -   Multisegmented index not selected when
                  a not-equal predicate specified.

     ECO 32   -   Singleton subselect returns incorrect
                  results.

     ECO 33   -   FOR ... MODIFY ... PRINT ... END returns
                  incorrect results.

     ECO 34   -   Dynamic OR within Static OR Strategy
                  produces incorrect results.

     ECO 35   -   A query using Static OR and a common
                  subexpression in two or more OR legs
                  produces incorrect results.

     ECO 36   -   A join query matches null aggregate to
                  blanks and produces incorrect results.


Installation Overview
---------------------

You must shutdown all products instrumented with VAX Rdb/VMS prior
to the ECO kit installation.

You must shutdown the VAX Rdb/VMS monitor prior to the ECO kit
installation.  If the monitor is not stopped, the installation will
abort.

The ECO kit can be installed with the VMSINSTAL command procedure,
as outlined in Chapter 3 of the VMS System Manager's Manual
AA-LA00A-TE.

The ECO kit checks to ensure that VAX Rdb/VMS V4.0A is installed
before proceeding.  If any version other than V4.0A is found, the
installation aborts.
```

The ECO kit checks to see if any of the ECOs found in the kit have already been applied. If some of the included ECOs have been applied, an informational message is displayed; the installation skips that ECO and continues on to the next.

The ECO kit restarts the VAX Rdb/VMS monitor after all ECOs have been applied.

Installing the VAX Rdb/VMS ECO Kit
---

1. Verify that VAX Rdb/VMS V4.0A is on the system:

```
$ RUN SYS$SYSTEM:RDO
RDO> SHOW VERSION
```

2. Shutdown the VAX Rdb/VMS monitor:

```
$ @SYS$STARTUP:RMONSTOP
```

3. Install the VAX Rdb/VMS ECO kit:

```
$ SET DEFAULT SYS$UPDATE
$ @VMSINSTAL RDBVMS_ECO001040A <device_name> <options>
```

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APPENDIX D SAMPLE MUP SUBMISSION FORM

NOTE

This form contains a sample submission form for VAX Rdb/VMS V4.0B (a MUP).

This submission form that is loaded into TIMA with the saveset (or subset) and cover letter. This form is made available to the Digital Services, but not to customers. This information is very important to Digital Services.

A copy of this form can be obtained from:

SQM::SYS$INFO:STD_204_SUBMISSION_FORM.TXT

If you have any questions or suggestions regarding the form, please contact SQM::SQM

```
================================================================================
Digital Standard 204 S/W ECO/MUP Submission Form
================================================================================
Is this kit an ECO or MUP X   ?
--------------------------------------------------------------------------------
S/W Saveset/Subset Name(s): RDBVMS_MUPB040.A
--------------------------------------------------------------------------------
Name and Version(s) of this Product for this ECO/MUP: Rdb/VMS V4.0B
--------------------------------------------------------------------------------
Minimum Operating System/Version and Maximum if needed: VMS V5.3 and greater
--------------------------------------------------------------------------------
If MUP, is MUP a partial or complete software kit?  Partial  X    Complete
--------------------------------------------------------------------------------
If MUP, target date MUP will be available from SSB: 30-Mar-1992
--------------------------------------------------------------------------------
If MUP and VMS Product, what is the SSB tape label name?

              BB-W872R-BE    VAX RDB/VMS V4.0B 16MT9
              AQ-FP16P-BN    VAX RDB/VMS V4.0B TK50
              BB-GX07N-BE    VAX RDB/VMS RT V4.0B 16MT9
              AQ-GX11N-BE    VAX RDB/VMS RT V4.0B TK50
              BB-LE55J-BE    VAX RDB/VMS INT V4.0B 16MT9
              AQ-LE54J-BE    VAX RDB/VMS INT V4.0B TK50

--------------------------------------------------------------------------------
Does this ECO/MUP contain new funtionality or new hardware support?  YES
                                                                     NO X
--------------------------------------------------------------------------------
Does this ECO/MUP use the platform's standard installation procedure? YES  X
                                                                      NO
--------------------------------------------------------------------------------
Are there Release Notes for this ECO/MUP?  YES  X   No
--------------------------------------------------------------------------------
Is this ECO/MUP cumulative (contains all previous ECOs or MUPs)?  YES  X  NO
--------------------------------------------------------------------------------
Does this ECO/MUP follow naming conventions outlined in subhead 3.5? YES X  NO
--------------------------------------------------------------------------------
```

Which images/executables or object libraries/archive files are replaced/patched and how are they uniquely identified (and describe how to identify them)?

Image File Name	ID Name	Replaced?	Patched?
RDMSHRP.EXE	RDB/VMS V4.0-2	X	
RMU.EXE	RDB/VMS V4.0-2		X

To identify RMU: anal/image sys$system:rmu.exe

What Code Stream or Version #(s) has this ECO been checked into: N/A

Regression tested: YES X NO

Test Program programs added to the Regression Test System: YES X NO

If no, why not?

Tested at site where problem programs reported? YES X NO

If no, why not?

Interoperability tested? YES X NO

If no, why not?

Engineer Contact: Susan Hillson NODE ADDRESS: NOVA::HILLSON DTN: 222-4444

==========

Brief Problem Statement including customer symptoms:

ECO 31 - Multsegmented index not selected when a not equal predicate specified
ECO 32 - Singleton subselect returns incorrect results
ECO 33 - FOR... MODIFY... PRINT... END returns incorrect results
ECO 34 - Dynamic OR within Static OR Strategy produces incorrect results
ECO 35 - A query using Static OR a common subexpression in 2 or more OR legs produces incorrect results
ECO 36 - A join query matches null aggregate to blanks and produces incorrect results

---

Problem(s) fixed:

ECO#	CLD SPR QAR	Number	Reported Date	Reported by	Category or Priority
31	CLD	CXO-06994	21-May-1991	Pacificare	Critical
32	SPR	32425	7-Mar-1991	Philips Polydata	Critical
33	Internal	Rdb/40	29-May-1991	Philippe Vigier	Critical
34	QAR	PMT-9623	14-Feb-1991	Hagar Ronen	Critical
35	QAR	17	6-Jun-1991	Delek, Israel	Critical
36	QAR	201	22-Jun-1991	Boeing	Critical

APPENDIX E FAULTY ECOS

This appendix contains the steps for engineering to follow when faulty ECOs are found. Since MUPs ship out of the software manufacturing, MUPs should follow the standard hold process for products.

1. Engineering is notified of a problem with the ECO. This notification can come from Digital Services, SQOIS, or a customer. Digital Services can use the engineering contact name that is listed in the Submission Form since the Submission Form is available to Digital Services.
2. Engineering evaluates the seriousness of the problem and decides if the ECO should be put on hold.
3. Engineering puts the ECO on hold in the CSERL which causes SQOIS to be notified. SQOIS will then notify the TIMA administrator to have the ECO removed from TIMA. Engineering should also supply a brief description of the problem to SQOIS so that a TIMAgram or TIMAnews can be sent to Digital Services.
   - — Depending on engineering's recommendation, SQOIS will make the previous ECO kit available to TIMA from the CSERL (remember ECOs are cumulative) if the previous ECO kit does not contain the "faulty" ECO. Engineering may also choose, as a short term solution, to repackage the ECO kit to exclude the "faulty" ECO. This repackaged ECO kit should also try to "remove" the "faulty" ECO if possible.
   - — Engineering writes a TIMA article to describe the problem with the ECO and give their recommendation, for example, use previous ECO or new kit. Engineering submits this article to SQOIS for inclusion into the TIMA data base.
4. Engineering should provide a new ECO to correct the problem that the "faulty" ECO was intended to correct.

APPENDIX F ASSOCIATED FILES

Here is a list of the locations of the associated files for this document.

JOKUR::PUBLIC:STD_204_IMPLEMENTATION_PLAN.PS

SQM::SYS$INFO:STD_204_GETTING_STARTED.TXT

SQM::SYS$INFO:STD_204_SUBMISSION_FORM.TXT

SQM::SYS$INFO:STD_204_COVER_LETTER_TEMPLATE.TXT

SQM::SYS$INFO:STD_204_COVER_LETTER_EXAMPLE.TXT

SQM::SYS$INFO:STD_204_RELEASE_NOTES_TEMPLATE.TXT

SQM::SYS$INFO:STD_204_VMSINSTAL_PATCH_IMAGE_TEMPLATE.TXT
(for VMS)

SQM::SYS$INFO:STD_204_VMSINSTAL_REPLACE_IMAGE_TEMPLAT.TXT
(for VMS)

SQM::SYS$INFO:STD_204_UNIX_SUBSET_TEMPLATE.TXT
(for Digital UNIX Operating Systems)

SQM::SYS$INFO:STD_204_DOS_INSTALL_TEMPLATE.TXT
(for MS–DOS)

NOTE

European sites can obtain the associated files from the SQMUK::SYS$INFO: directory and Asian sites can obtain the files from the SQMJPN::SYS$INFO: directory.

APPENDIX G REFERENCED DOCUMENTS

G.1 Digital Documents, EL-Class

Document Number	Document Title
EL-00038-00	*DEC STD 038-0 System Evaluation of New Products - General*
EL-CP790-00	*Digital Technical Requirements Reference Guide*

G.2 Digital Documents, Other Than EL-Class

Document Number	Document Title
AA-LA00A-TE	*VMS System Manager's Manual*
EY-F577E-DP	*DIGITAL GUIDE To Developing International Software*

G.3 Ordering Information

Use VTX SMC to order copies of EL-class Digital documents from Standards and Methods Control. Send distribution questions to JOKUR::SMC or call DTN: 234-4423.

Following are the sources for documents not available from Standards and Methods Control.

- Publishing and Circulation Services
  DTN: 234-4325
  NEST::ORDER
- Educational Services Development and Publishing
  DTN: 264-5627
  CGVAX2::MAILPO

GLOSSARY

BIV: Base International Version. A software product that has been designed and implemented according to the *EY-F577E-DP, DIGITAL GUIDE To Developing International Software,* that is capable of being easily translated into other user languages.

CDROM: Compact Disc Read-Only Memory. A distribution medium with large storage capacity that is read by laser rather than by magnetic heads.

CSC: Customer Support Center. In some geographies, this is referred to as a service center.

CSERL: Central Software Engineering Release Library. A worldwide software electronic library maintained by SQOIS. Software engineering groups submit product content into CSERL where *DEC STD 038-0 System Evaluation of New Products—General* certification agents certify the product and SQA determines and approves product readiness. Once product readiness is approved, engineering declares their product *fit-to-manufacture* by releasing the product content to ISEP.

ECO: Engineering Change Order. A software fix that adheres to the requirements of this standard.

ESSB: European Software Supply Business. Software manufacturing for Europe.

ISEP: Information System for Electronic Publishing. The worldwide software manufacturing electronic library that contains the corporate masters of the software product binaries and documentation.

LMF: License Management Facility. Allows a mechanism to protect proprietary software products.

MUP: Mandatory Update. A MUP is a critical ECO (for example, a data corruption fix), that needs to be distributed directly to all customers.

NPF: New Product Form. An engineering bill of materials for each software product that must exist for software manufacturing.

PAK: Product authorization key. A paper printout of a license used as input for the LMF data base.

program team: Any product development effort involving the services of marketing, engineering, customer service, sales, and manufacturing. The program team has representatives from each function and meets on a regular basis. The program team is sometimes called the product team or 5X5 team.

Saveset: A saveset is a VMS file that is written by BACKUP within which is stored the data and directory structure of many files.

SD&Ds: Software Duplication and Distribution organization. SD&Ds are the GIA software manufacturing areas.

setld: A *Shell Script* whose purpose is to install Digital's UNIX Operating Systems Layered Products.

software fix: A modification to software to fix a problem (binary or source change). Sometimes called a software patch.

SPD: Software Product Description. The SPD is a legal document that describes the software product and details the technical environment in which the product will be supported.

SQA: Software Quality Assurance organization.

SQOIS: Software Quality Operations and Information Services organization. SQOIS was formally known as SQM.

SSA: Software Support Addendum that describes the technical environment in which the product is supported. The SSA usually ships with the SPD, but can ship separately.

SSB: Software Supply Business organization.

Subset: A subset is a Digital UNIX file that is processed by the setld utility within which is stored the data and directory structure of many other files.

TIMA: Technical Information Management Architecture.

TIMAgram: The TIMAgram message utility is used to send messages to selected users of the TIMA community. The user selection is based on each TIMA user's profile.

TIMAnews: The TIMAnews message utility is used to send messages to the entire TIMA community.

VMSINSTAL: A command file that prompts its user for information needed for the installation of a VAX/VMS Layered Product and then installs the product.

ZIP files: A ZIP file is a MS–DOS file (of that extension name) used to store other files in a data compressed format.

```
+---------------------------------------------------------------------+
|                        READER COMMENTS                              |
|                                                                     |
| Your  comments  and suggestions  will help  Standards and Methods   |
| Control improve their services and documents.                       |
+---------------------------------------------------------------------+
```

Did you request this document? _____ If so, did it arrive within a satisfactory period of time? _____ Please comment.

What are your impressions of this document? Consider format, organization, completeness, readability, and illustrations.

————————————**FOLD ON THIS LINE**———————————————————————— -

Did you find technical or clerical errors in this document? If so, please specify the page number(s) and the error(s).

Are the instructions for the update package clear? _____
Was an index available? _____ If not, is one needed? _____
Do you have other suggestions for improving this document?

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Department _____ Node _____

Send your comments to JOKUR::PROJECTS, or fold, staple, and send this page through interoffice mail to:

```
+------------------------------+
|       READERS' COMMENTS      |
| STANDARDS AND METHODS CONTROL |
|           NRO5/I2            |
+------------------------------+
```